What is claimed:

1. A method for covalently affixing a biomolecule to a second molecule comprising contacting a biomolecule having an azido group covalently and operably affixed thereto with a second molecule having an alkynyl group covalently and operably affixed thereto under conditions permitting a 1,3-dipolar cycloaddition reaction to occur between the azido and alkynyl groups, thereby covalently affixing the biomolecule to the second molecule.

2. The method of claim 1, wherein the biomolecule is selected from the group consisting of a nucleic acid, a protein, a peptide, a carbohydrate, and a lipid.

3. The method of claim 2, wherein the biomolecule is DNA.

4. The method of claim 2, wherein the biomolecule is an antibody.

5. The method of claim 2, wherein the biomolecule is an enzyme.

6. The method of claim 2, wherein the biomolecule is a receptor or a ligand-binding portion thereof.

7. The method of claim 1, wherein the second molecule is selected from the group consisting of a biomolecule, a fluorescent label, a radiolabeled

molecule, a dye, a chromophore, an affinity label, and a dextran.

8. The method of claim 1, wherein the second molecule is selected from the group consisting of a an antibody, biotin, streptavidin, and a metabolite.

9. The method of claim 1, wherein the biomolecule is immobilized.

10. The method of claim 1, wherein the second molecule is immobilized.

11. The method of claim 1, wherein neither the biomolecule nor the second molecule is immobilized.

12. The method of claim 1, wherein the conditions permitting a 1,3-dipolar cycloaddition reaction to occur comprise the application of heat.

13. The method of claim 1, wherein the conditions permitting a 1,3-dipolar cycloaddition reaction to occur comprise contacting at room temperature.

14. The method of claim 13, further comprising contacting in the presence of an agent which catalyzes a 1,3-dipolar cycloaddition reaction.

15. The method of claim 1, wherein the conditions permitting a 1,3-dipolar cycloaddition reaction to occur comprise contacting at 4°C.

16. The method of claim 15, further comprising contacting in the presence of an agent which catalyzes a 1,3-dipolar cycloaddition reaction.

17. A method for covalently affixing a biomolecule to a second molecule comprising contacting a biomolecule having an alkynyl group covalently and operably affixed thereto with a second molecule having an azido group covalently and operably affixed thereto under conditions permitting a 1,3-dipolar cycloaddition reaction to occur between the alkynyl and azido groups, thereby covalently affixing the biomolecule to the second molecule.

18. The method of claim 17, wherein the biomolecule is selected from the group consisting of a nucleic acid, a protein, a peptide, a carbohydrate, and a lipid.

19. The method of claim 18, wherein the biomolecule is DNA.

20. The method of claim 18, wherein the biomolecule is an antibody.

21. The method of claim 18, wherein the biomolecule is an enzyme.

22. The method of claim 18, wherein the biomolecule is a receptor or a ligand-binding portion thereof.

23. The method of claim 17, wherein the second molecule is selected from the group consisting of

a biomolecule, a fluorescent label, a radiolabeled molecule, a dye, an affinity label, a chromophore, or a mass tag.

24. The method of claim 17, wherein the second molecule is selected from the group consisting of an antibody, biotin, streptavidin, a metabolite, an aptamer, and a dextran

25. The method of claim 17, wherein the biomolecule is immobilized.

26. The method of claim 17, wherein the second molecule is immobilized.

27. The method of claim 17, wherein neither the biomolecule nor the second molecule is immobilized.

28. The method of claim 17, wherein the conditions permitting a 1,3-dipolar cycloaddition reaction to occur comprise the application of heat.

29. The method of claim 17, wherein the conditions permitting a 1,3-dipolar cycloaddition reaction to occur comprise contacting at room temperature.

30. The method of claim 29, further comprising contacting in the presence of an agent which catalyzes a 1,3-dipolar cycloaddition reaction.

31. The method of claim 17, wherein the conditions permitting a 1,3-dipolar cycloaddition reaction to occur comprise contacting at 4°C.

32. The method of claim 31, further comprising contacting in the presence of an agent which catalyzes a 1,3-dipolar cycloaddition reaction.

33. A method for covalently affixing a biomolecule to a solid surface comprising contacting a biomolecule having an azido group covalently and operably affixed thereto with a solid surface having an alkynyl group operably affixed thereto under conditions permitting a 1,3-dipolar cycloaddition reaction to occur between the azido and alkynyl groups, thereby covalently affixing the biomolecule to the solid surface.

34. The method of claim 33, wherein the biomolecule is selected from the group consisting of a nucleic acid, a protein, a peptide, a carbohydrate, and a lipid.

35. The method of claim 34, wherein the biomolecule is DNA.

36. The method of claim 34, wherein the biomolecule is an antibody.

37. The method of claim 34, wherein the biomolecule is an enzyme.

38. The method of claim 34, wherein the biomolecule is a receptor or a ligand-binding portion thereof.

39. The method of claim 33, wherein the solid surface is selected from the group consisting of glass, silica, diamond, quartz, gold, silver, metal, polypropylene, and plastic.

40. The method of claim 39, wherein the solid surface is silica.

41. The method of claim 39, wherein the solid surface is present on a bead, a chip, a wafer, a filter, a fiber, a porous media, or a column.

42. The method of claim 33, wherein the conditions permitting a 1,3-dipolar cycloaddition reaction to occur comprise the application of heat.

43. The method of claim 33, wherein the conditions permitting a 1,3-dipolar cycloaddition reaction to occur comprise contacting at room temperature.

44. The method of claim 43, further comprising contacting in the presence of an agent which catalyzes a 1,3-dipolar cycloaddition reaction.

45. The method of claim 33, wherein the conditions permitting a 1,3-dipolar cycloaddition reaction to occur comprise contacting at 4°C.

46. The method of claim 45, further comprising contacting in the presence of an agent which catalyzes a 1,3-dipolar cycloaddition reaction.

47. A method for covalently affixing a biomolecule to a solid surface comprising contacting a biomolecule having an alkynyl group covalently and operably affixed thereto with a solid surface having an azido group operably affixed thereto under conditions permitting a 1,3-dipolar cycloaddition reaction to occur between the alkynyl and azido groups, thereby covalently affixing the biomolecule to the solid surface.

48. The method of claim 47, wherein the biomolecule is selected from the group consisting of a nucleic acid, a protein, a peptide, a carbohydrate, and a lipid.

49. The method of claim 48, wherein the biomolecule is DNA.

50. The method of claim 48, wherein the biomolecule is an antibody.

51. The method of claim 48, wherein the biomolecule is an enzyme.

52. The method of claim 48, wherein the biomolecule is a receptor or a ligand-binding portion thereof.

53. The method of claim 47, wherein the solid surface is selected from the group consisting of glass,

silica, diamond, quartz, gold, silver, metal, polypropylene, and plastic.

54. The method of claim 53, wherein the solid surface is silica.

55. The method of claim 53, wherein the solid surface is present on a bead, a chip, a wafer, a filter, a fiber, a porous media, or a column.

56. The method of claim 47, wherein the conditions permitting a 1,3-dipolar cycloaddition reaction to occur comprise the application of heat.

57. The method of claim 47, wherein the conditions permitting a 1,3-dipolar cycloaddition reaction to occur comprise contacting at room temperature.

58. The method of claim 57, further comprising contacting in the presence of an agent which catalyzes a 1,3-dipolar cycloaddition reaction.

59. The method of claim 47, wherein the conditions permitting a 1,3-dipolar cycloaddition reaction to occur comprise contacting at 4°C.

60. The method of claim 59, further comprising contacting in the presence of an agent which catalyzes a 1,3-dipolar cycloaddition reaction.

61. A biomolecule having an azido group covalently and operably affixed thereto.

62. The biomolecule of claim 61, wherein the biomolecule is selected from the group consisting of a nucleic acid, a protein, a peptide, a carbohydrate, and a lipid.

63. The biomolecule of claim 62, wherein the biomolecule is DNA.

64. A biomolecule having an alkynyl group covalently and operably affixed thereto.

65. The biomolecule of claim 64, wherein the biomolecule is selected from the group consisting of a nucleic acid, a protein, a peptide, a carbohydrate, and a lipid.

66. The biomolecule of claim 65, wherein the biomolecule is DNA.

67. A solid surface having an azido group operably affixed thereto.

68. The solid surface of claim 67, wherein the solid surface is selected from the group consisting of glass, silica, diamond, quartz, gold, silver, metal, polypropylene, and plastic.

69. The solid surface of claim 68, wherein the solid surface is present on a bead, a chip, a wafer, a filter, a fiber, a porous media, or a column.

70. The solid surface of claim 68, wherein the solid surface is a silica surface.

71. The solid surface of claim 70, wherein the silica surface is part of a chip.

72. A solid surface having an alkynyl group operably affixed thereto.

73. The solid surface of claim 72, wherein the solid surface is selected from the group consisting of glass, silica, diamond, quartz, gold, silver, metal, polypropylene, and plastic.

74. The solid surface of claim 73, wherein the solid surface is present on a bead, a chip, a wafer, a filter, a fiber, a porous media, or a column.

75. The solid surface of claim 73, wherein the solid surface is a silica surface.

76. The solid surface of claim 75, wherein the silica surface is part of a chip.

77. A biomolecule covalently affixed to a second molecule via the method of claim 1 or 17.

78. A biomolecule covalently affixed to a solid surface via the method of claim 33 or 47.

79. A biomolecule covalently affixed to a second molecule via a 1,2,3-triazole ring.

80. A biomolecule covalently affixed to a solid surface via a 1,2,3-triazole ring.